

WHAT IS CLAIMED IS:

1. A process for utilizing waste salt mixtures from HALEX reactions comprising

- (1) extracting organic constituents from a waste salt mixture comprising at least one alkali metal chloride and at least one alkali metal fluoride, and optionally at least one organic compound,
- (2) contacting the resulting waste salt mixture with an excess amount of concentrated sulfuric acid,
- (3) flushing the resulting hydrogen halides from the resulting mixture by passing an inert gas through it, and
- (4) reacting the resulting salt-containing sulfuric acid with calcium fluoride to give hydrogen fluoride and an alkali metal sulfate-containing calcium sulfate binder.

2. A process according to Claim 1 wherein the alkali metal

15 fluoride originally used for the HALEX reaction is potassium fluoride or potassium bifluoride.

3. A process according to Claim 1 wherein the temperature when contacting with sulfuric acid is 0°C to 300°C.

4. A process according to Claim 1 wherein the inert gas used to

20 remove the hydrogen halide is air, nitrogen, or a mixture thereof.

5. A process according to Claim 1 wherein

- (a) the salt-containing sulfuric acid that is present following the removal of hydrogen halides is reacted with calcium fluoride,
- (b) excess acids are neutralized with calcium oxide, and
- 25 (c) the resulting calcium sulfate is ground to give a calcium sulfate binder.

6. A building material binder comprising calcium sulfate binder prepared according to Claim 1.